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THE GENUS TORREYOCHELOA

GEORGE L. CHURCH

IN a recent issue of *RHODORA*, Clausen (1952) has agreed with the author's removal (Church, 1949) of the open-sheathed *Torreychloa pallida* (Torr.) Church [*Glyceria pallida* (Torr.) Trin.] from its anomalous position in *Glyceria*, a genus which is unusual in its character of closed sheaths. Rather than recognize the distinct generic status of the species, however, Clausen has transferred it to a new section of *Puccinellia*.

The taxonomic vicissitudes of *Puccinellia*, including its confusion with *Glyceria*, were reviewed by Fernald and Weatherby (1916). The genus is readily separated from *Glyceria* on the basis of the faint nervation of the lemmas, together with the usual caespitose habit, the inrolling of the leaf margins, the stiff (rather than strongly flexuous) panicle branches and the alkaline habitat. Furthermore, an examination of both Old and New World collections will reveal the fact that all three above mentioned genera may be separated not only by the spikelet characters but those of the caryopses as well, according to the following key:

Leaf sheaths connate; upper glumes uni-nerved; styles present; caryopsis narrowly or broadly ovoid (occasionally obovoid), dark castanaceous, and bearing a long, linear hilum and apical, remnant styles..... *Glyceria*.
Leaf sheaths free and overlapping; upper glume trinerved; styles absent.
Lemma nerves prominent; caryopsis broadly ovoid, dark honey colored, and bearing a reddish brown, oblong hilum—one third the length of the grain, the apex crowned with stiff, rather connate bristles in addition to remnant stigmas..... *Torreychloa*.
Lemma nerves obscure; caryopsis fusiform, medium to olive-brown, and bearing a chestnut-brown, oval, subbasal hilum, the apex covered with matted, remnant stigmas only..... *Puccinellia*.

Again, the three genera may be distinguished on the basis of the cell patterns in the leaf epidermis, which are revealed in easily prepared, microscope slide mounts. These characters have been employed successfully by Prat (1936) in interpreting taxonomic relationships in the Gramineae. With respect to *Glyceria*, members of the sections *Euglyceria* and *Hydropoa* have epidermal cells with smooth walls and papillae (silicified projections) while the section *Striatae* is typified by smooth walls of cells lacking papillae. In *Torreyochloa* the cells have rippled walls and lack papillae while those of *Puccinellia* have rippled walls and abundant papillae.

Finally, cytological studies reveal the fact that the chromosomes of all three genera are distinct with respect to structural characters of width and length (Church, 1949). The chromosomes of *Glyceria* are small (medium in *Hydropoa*), while in *Puccinellia* they are narrow and long. *Torreyochloa*, however, has chromosomes that are large in all dimensions. The similarity of the basic chromosome number of seven in the latter two genera does not necessarily indicate close affinity, especially when the aforementioned structural differences are considered.

As further evidence of the relationship between *Torreyochloa* and *Puccinellia*, Clausen cites the similarity of open sheaths, triple-nerved upper glumes and branching stigmas. On the basis of these characters, as well as the additional ones of faint lemma nervation and alkaline habitat, the *Nevadensis* section of *Poa* might be united with *Puccinellia*. Again, in this case, however, the leaf epidermis, caryopses and chromosome morphology all present differences sufficient for the maintenance of distinct genera. With regard to this same group of characters, *Torreyochloa* remains equally distinct.

The fact noted by Clausen that *Torreyochloa pallida* and *Puccinellia distans* (L.) Parl. grow under identical conditions in the Montezuma marshes in central New York is an illustration of the wide range of adaptability of the latter species which is a European introduction. According to Hegi (1935), *P. distans* shows much less of a preference for alkaline habitats than the other well known Puccinellias of the littoral zone. One European variety of *P. distans*, grows even in essentially fresh habitats. *P. grandis* Swallen of the Pacific coast will thrive in practically

neutral soil under greenhouse conditions. The approximation of habitat preference in the apparently rare cases of species in the two genera would hardly seem to be a reason for their merger into one genus, however.

Although *Torreyochloa* has not been accepted by either Fernald (1950) in the eighth edition of Gray's Manual or Chase (1950) in the revised edition of the Manual of Grasses, one cannot assume that these authors would have departed from a conservative point of view and concurred with Clausen's expanded concept of *Puccinellia*. On the other hand, Swallen (1951) has accepted *Torreyochloa* in his treatment of the Gramineae in the Arizona Flora of Kearney and Peebles.

For the present, Clausen has made a transfer to *Puccinellia* only of *T. pallida*, since he considers the taxonomic status of the other species of *Torreyochloa* uncertain. It is very difficult, however, to concede this point of view with respect to the well known *T. pauciflora* (Presl.) Church. Undoubtedly, it may be considered a vicarious species (Cain, 1944) in the sense that it is the western counterpart of the eastern *T. pallida*, from which it is distinct, nevertheless, in being commonly one meter tall, thick-stemmed and wide-leaved. In contrast, *T. pallida* is typified by short, weak, decumbent stems and narrow leaves. *T. erecta* (Hitch.) Church and *T. fernaldii* (Hitch.) Church are extremes that probably do not merit specific rank. *T. otisii* (Hitch.) Church is a rare species of the Olympic Peninsula, but an examination of the few specimens available reveals all of the distinct characters clearly noted in the Manual of Grasses. *T. natans* (Kom.) Church and *T. viridis* (Honda) Church of eastern Asia may require further study as to range, but they both show the characteristic caryopsis and leaf epidermis features of the genus.

Since *Torreyochloa* may be distinguished from *Puccinellia* on morphological grounds, even without the cytological evidence, Clausen's suggested merger of the two genera introduces an unnatural element into *Puccinellia*, which otherwise remains as a very uniformly composed genus.—DEPT. OF BOTANY, BROWN UNIVERSITY, PROVIDENCE, R. I.

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THE DISTRIBUTION OF ARNICA WILSONII RYDBERG AND ITS SIGNIFICANCE¹

BERNARD BOIVIN

Arnica wilsonii Rydb. belongs to the *A. lonchophylla* Greene group and was long known only by the type collection made in 1902 about 140 miles up the Kapiscow River in northern Ontario. It was collected anew in 1946 by Dutilly and Lepage in northern Ontario, about 50 miles up the Attawapiskat, and again in 1950 by Schofield in northern Manitoba, on the Limestone River, about 50 miles west of Hudson Bay. This type of distribution, inland from the Hudson Bay and along a line roughly parallel with the present shoreline, is rather unexpected.

It has long been known that a number of entities presenting a disjunct range occur along the southern edge of Hudson and James Bays. The intervening area of northern Ontario and adjacent Quebec and Manitoba was very little known botanically, but it was expected that, when better known, it would show that many of those disjunct species really have a continuous range. As new collections continue to be made in this area, relatively few intervening localities for these disjunct species are turning up, but instead a new series of disjunct ranges is being discovered. These disjunct ranges seem to fall into four types:

1—Prairie outliers, such as *Linum lepagei* Boivin, a vicariant of *L. lewisii* Pursh, a common species in the Canadian Prairies.

¹ Contribution No. 1184, from the Division of Botany and Plant Pathology, Science Service, Department of Agriculture, Ottawa, Canada.

These occur around Hudson Bay mostly on sand dunes and other relatively dry habitats. They may occasionally occur inland in similar habitats.

2—Shoreline outliers, species that were presumably widespread around the Champlain Sea and along the shores of the larger glacial lakes bordering the continental ice-sheet during its last retreat, species that now exist around the Gulf of Saint Lawrence, Hudson Bay and around some of the larger inland fresh water lakes, relicts of still larger glacial lakes. These are strictly strand species, but may sometimes occur inland along former shorelines of the Champlain Sea and of late glacial lakes.

3—Cliff outliers, such as *Clematis verticillaris* DC.² whose detailed distribution will be given elsewhere. These occur on cliffs, mainly on present shore cliffs, but are frequently found inland on former shore cliffs of the Champlain Sea and of the glacial lakes.

4—Lowland outliers, such as *Cypripedium calceolus* L., which reaches north to the lowlands of the Saint Lawrence Valley and reappears northward around James Bay.

The distribution of *Arnica wilsonii* Rydberg, a species now found part of the way down the rivers draining into Hudson Bay, and a close segregate of *A. lonchophylla* Greene and *A. chionopappa* Fern. found near Lake Superior, seems to indicate the probable path of those northward migrations, namely the numerous north-flowing rivers with their headwaters near the Great Lakes or in the Canadian Prairie and also perhaps the glacial rivers that drained the glacial lakes southward into the Saint Lawrence and Mississippi basins.

Presumably these species first established themselves around the temporary lakes fronting the glacier after the edge of the ice cap had retreated beyond the Atlantic-Hudson Bay divide. As the ice front retreated, the glacial lakes gradually lowered their levels and successive shorelines were established and abandoned, each one farther north than the preceding shoreline, until the glacial lakes finally merged into the present Hudson and James Bays. Some species, such as *Tanacetum huronense* Nutt., *Thalictrum confine* Fern., etc., were apparently able to migrate from shoreline to shoreline and still exist around the modern

² See also: Boivin B., Les variations canadiennes du *Clematis verticillaris* DeCandolle et leur distribution (*in press*).

coast. Others, such as *Arnica wilsonii* Rydb., *Clematis verticillaris* DC., etc., were either unable to migrate that far north or to cope with such rapid changes of shorelines, but once established were able to persist inland until today and long after the disappearance of the conditions which originally favored their migration northward.

Another group of Hudson Bay disjuncts, the halophytes,³ was discussed by D. Potter, Botanical Evidence of a Post-Pleistocene Marine Connection between Hudson Bay and the St. Lawrence Basin, *RHODORA* 34: 69-89, 101-112. 1932. On the basis of phytogeographic data, Potter postulated the existence of a marine connection, or near connection, in the vicinity of the headwaters of the Ottawa River, between the Champlain Sea at its highest level and Hudson Bay at a former higher level. Potter's hypothesis and the above hypothesis are not mutually exclusive as most of the species concerned could have migrated northward along the coast of a large body of water regardless of whether the water was fresh or salty. We may consider that some of the species listed by Potter to support his theory, such as *Potentilla anserina* L., are really strand species and are in no way salt-water obligates. We may also consider that many other species, though being primarily halophytes, have turned out to be capable of persisting or establishing themselves away from the sea coast, such as:

JUNCUS GERARDII Lois. Former shores of the Champlain Sea (Ottawa); weed along railway embankments, etc. (Cochrane, Hope, Brandon).

ZANNICHELLIA PALUSTRIS L., var. *MAJOR* (Boenn.) Koch. Known to occur in fresh water marshes near the sea coast; sometimes persistent inland (Varennes).

CAREX MARITIMA L. and *SCIRPUS RUFUS* (Hudson) Schrad. The distribution maps given by Potter include some inland stations.

CAREX MACKENZIEI Krecz. (*C. norvegica* sensu Potter). This species is a good halophyte along the Atlantic seaboard but its Hudson Bay phase seems to be indifferent to fresh water if we judge by the collector's data on the three Hudson Bay specimens in our herbarium. These are as follows: 1—in dense mat on creek bank; 2—abundant in dense mats on willow flats; 3—very damp mossy ground.

POA EMINENS J. S. Presl. This is primarily a halophyte, but our collectors in Alaska report that it may sometimes be found a short distance

³ See also: Boivin B., La Florule du mont Blanc, Gaspésie (*in press*).

away from the coast. At Seward, in particular, it may occur as a weed in town or as a pioneer species in vacant lots.

CAREX BIPARTITA Bell., var. *AMPHIGENA* (Fern.) Pol. (*C. glareosa* var.), *ARENARIA PEPLOIDES* L., *MERTENSIA MARITIMA* (L.) S. F. Gray. These are now known to occur all the way around the Labrador Peninsula and could very well have reached the James Bay region by following the outer sea coast.

PLANTAGO JUNCOIDES Lam., *TRIGLOCHIN PALUSTRIS* L., *TRIGLOCHIN MARITIMA* L., *LATHYRUS JAPONICUS* W. (*L. maritimus* (L.) Big.). These begin to appear along the lower Saint Lawrence at least 50 miles inland from the western limit of the brackish water.

POTAMOGETON FILIFORMIS Pers. This is a fresh water species occurring sometimes in slightly brackish situations.

SCIRPUS AMERICANUS Pers., *MYRIOPHYLLUM EXALBESCENS* Fern. These species occur indifferently in fresh water and brackish water habitats.

JUNCUS BALTIKUS W., var. *LITTORALIS* Eng. Known to occur around Lake Saint John as a relict of the Champlain submergence and is therefore susceptible of adapting itself to fresh water conditions.

BIDENS HYPERBOREA Greene. Not a halophyte, but an estuarine species.

ZOSTERA MARINA L. A strict halophyte, not known to occur in the Hudson Strait ($62^{\circ} 30'$) region, but it is not confined to the James Bay region. It is known to occur in West Greenland as far north as $64^{\circ} 23'$ and in the northern part of Hudson Bay, as far north as $61^{\circ} 5'$, only about 90 miles farther south than Hudson Strait, and could very well have entered the Bay from the north.

GLAUX MARITIMA L., var. *OBTUSIFOLIA* Fern. This variety occurs on the Saint Lawrence as far west as the contact zone between the fresh and the salt water where it is apparently submitted to alternating tides of slightly brackish water and almost fresh water.

Thus it would seem that some of the species used by Potter to support his theory could very well have reached the James Bay region by following the outer sea coast around the Labrador Peninsula, while all the others are sufficiently tolerant of inland and fresh water situations that their presence in that area could be explained away by the hypothesis outlined above. They could have first reached the upper Ottawa region via the Champlain Sea coast. They could then have colonized the coast and shores of the glacial lake a few miles away to the north. As the shoreline was displaced gradually to the north, first with the successively lower levels of the glacial lake, then with the progressively lower Hudson Bay waters, these plants were presumably able to colonize each successive shoreline until they reached their present location.

The chief weakness of Potter's hypothesis is that it postulates a maritime connection or near connection between Hudson Bay and the Champlain Sea at their higher levels. Geological evidence of such a connection or near connection has not been forthcoming.

On the other hand there is a very large clay belt extending over a wide area of northern Ontario and adjacent Quebec. This clay belt was deposited in a glacial lake that has been named Lake Ojibway. It extends north of the Hudson Bay-Saint Lawrence divide as far as about two-thirds of the way to James Bay. It also extends a short distance south of the present divide. There is some evidence to indicate that at its earliest stage and highest level Lake Ojibway was cut in two by an ice lobe extending across the Upper Ottawa Valley near the present continental (i. e. Arctic-Atlantic) divide. The southern half of the lake was located approximately where one now finds Lake Timiskaming. This latter half was called Lake Barlow. It is supposed to have discharged its waters via the Ottawa Valley. Lake Ojibway on the other hand is supposed to have had a series of successive outlets and shorelines that have not been yet worked out in detail.

As far as I am aware the exact relation between the south shore of Lake Ojibway or Lake Barlow and the north shore of the Champlain Sea has not yet been worked out in detail either, but in any event the two could very well have been no more than a few miles apart since the Ottawa arm of the Champlain Sea nearly reached the present divide while Lake Barlow extended some distance south of the same divide. Furthermore the two were undoubtedly connected by a very large glacial river.

This glacial river was probably very short, perhaps only 10 or 20 miles long, and if we consider that Lake Saint Peter, about 100 miles from brackish water and only 9 feet above sea level, is regularly submitted to a tide of about one foot in amplitude, it would appear quite possible that Lake Barlow may also have been subjected to small fresh water tides during its early stages, thus facilitating the invasion of its shores by plants of halophytic preferences.

It is not known whether those two bodies of water were ever actually in such close proximity. At any rate, all presently

known evidence indicates that, if there ever was any large body of water near the upper end of the Ottawa arm of the Champlain Sea, it was a glacial lake, and not a southern extension of Hudson Bay. Thus the presence of a series of halophytes in the James Bay area has to be explained either by a migration around the Labrador Peninsula, as seems to be the case for some of the species concerned, or else one has to accept the possibility of a migration via the shores of large bodies of fresh water in the manner outlined above. The species concerned do not seem to be essentially antipathetic to the presence of fresh water.

WHAT IS *HYPERICUM PROLIFICUM*?

H. K. SVENSON

IN *RHODORA* 42: 9–10. 1940, before I really understood the method by which Linnaeus had treated his species, and when designating a type sheet seemed somewhat mandatory, I selected from among the five specimens representing *H. prolificum* in the Linnaean Herbarium, the sheet no. 20, which consisted of flowering branches with mostly linear leaves. A photograph of this material is provided by Fernald & Schubert in *RHODORA* 50: 167. 1948. Linnaeus appended to his bibliographic treatment, among other descriptive notes, the words, “*Folia saepius revoluta, unde angusta Rosmarini*” (the leaves more often revolute, whence the narrow ones resemble those of rosemary). The other four sheets have broader-leaved specimens conforming in general to the ordinary accepted idea of *H. prolificum*. Therefore I considered sheet no. 20 as representing aberrant or unusual material of *H. prolificum*, and noted that Linneaus had realized the underlying situation in his differentia “*lineari-lanceolati*” in the polynomial specific name, and in the similar annotation at the bottom of sheet no. 20.

But Fernald & Schubert (*loc. cit.*) felt that the cited sheet no. 20 is specifically distinct from the remainder of the material, since (p. 168), “In the vast amount of herbarium material available, we have not been able to find anything which can be identified unquestionably with the Linnean sheet no. 20.” I, on the contrary, remain of the opinion that sheet no. 20 represents

merely an aberrant condition, perhaps ecological, of the generally accepted *H. prolificum*. A similar collection with many inrolled leaves was made by Mattoon at Long Pond, 1 mi. south of Dead Run, Wayne County, Illinois, on September 6, 1919 (specimen in herb. Arnold Arboretum) and in August 1951, I found the same type of plant abundant on open limestone along highway 19 east of Dickensonville, Russell County, southwestern Virginia (see illustration).

It is possible, but highly improbable, that this remote locality could have been the source of the Linnaean material described in 1767. The first journey to Cumberland Gap (so named by Dr. Thomas Walker's party in 1749) was by way of Sneedsville in northern Tennessee (cf. L. P. Summers, History of Southwest Virginia, 1903, p. 50). The area to the north was explored later, and the Clinch River remained as the bastion against Indian attacks. By 1774 a series of forts had been built along the east bank of the Clinch in southwestern Virginia. One of these was at Elk Gardens, 6 miles east of Lebanon on the north fork of Cedar Creek, not very far from the locality where I obtained the *Hypericum*. This fort occupied an eminence in the open cedar glade country, which extends for miles in a north to south direction.

When Spach's account of *Myriandra prolificum* (Hist. Nat. Veg. 5: 440. 1880) is carefully examined, it appears that he made about the same analysis of the situation that Linnaeus did, i. e. he included plants with leaves ranging from lanceolate to linear or linear-spatulate. The spatulate extreme was treated as *Myriandra spathulata*, based on "*Hypericum prolificum* Leconte!" from material collected in southern United States in the Paris Herbarium. Illustrations by Watson, Dendr. Britt. pl. 88, and of *H. foliosum* Jacq., Hort. Schoenbrunn. pl. 299, both of which were included by Spach under *M. prolificum*, are of broader-leaved plants (incidentally, I believe the writing on no. 22 in the Linnaean Herbarium is "canariense" rather than "canadense," as I stated in my previous paper).

A number of additional names were set up under *Myriandra* by Spach, those revolving about *Hypericum aspalathoides* and *H. fasciculatum* being specially interesting in this connection. *H. aspalathoides* Elliott (excluding the description) received the



Hypericum prolificum. Specimen from Russell County, Virginia (H. K. Stenson no. 13,000, August 16, 1951) (Gray Herbarium).

new name *Myriandra brachiphylla* Spach, and a *Drummond* specimen from Florida was cited. *H. aspalathoides* Willd. (*H. fasciculatum* Lam.) appears now as *Myriandra Brathydis* Spach; whereas Elliott's *H. fasciculatum* comes to rest under *Myriandra galiooides* (Lam.) Spach. *H. fasciculatum* Michx. (not Lamarck) is treated under *Myriandra Michauxii* (Desrous.) Spach. Dr. L. B. Smith caught the incorrect varietal transfer which I had made of *H. fasciculatum* and, as he has written me, it should read *Hypericum galiooides* Lam. var. *aspalathoides* (Willd.) Torr. & Gray, Fl. N. Am. 1: 672. 1840 (*H. galiooides* var. *fasciculatum* (Lam.) Svenson, RHODORA 42: 12. 1940). It is interesting to note that Spach came to the same conclusion to which I arrived, in identifying the Willdenow specimen of *Hypericum aspalathoides* with that of *H. fasciculatum* Lam., rather than with the plant with the very short leaf fascicles of Torrey and Gray, for which I gave the name *H. galiooides* var. *reductum*.

There is still one problem for which I did not give an adequate solution. R. M. Harper in Monograph 9 of the Geological Survey of Alabama (Woody Plants of Alabama, p. 272. 1928) mentioned a specimen sent in to him by Dr. A. J. Lloyd from dry rocky hills near Walnut Creek in Chilton County, Alabama, in the summer of 1921. Dr Harper and I later visited this locality and found plants locally abundant on micaceous rock in a recumbent or even creeping state with fasciculate leaves somewhat similar to those of the taller erect *H. fasciculatum* Lam. A number of similar collections appear toward the outer geographical range of *H. galiooides*, and one of these I illustrated in RHODORA 42: pl. 587, fig. 1940, but without description. In order to clear the record this variation should be described: *H. galiooides* var. **Lloydii** n. var. A planta typica differt caule procumbente, foliis fasciculatis filiformibus. Type from Graniteville, Aiken Co., South Carolina, Eggert in 1898 (herb. N. Y. Bot. Garden).—THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, N. Y.

PLANTS NEW TO ILLINOIS AND TO THE
CHICAGO REGION

JULIAN A. STEYERMARK

AND

FLOYD A. SWINK

THE following collections represent additions to the known flora of Illinois and/or the flora of the Chicago area of Illinois and Indiana. Since the publication of our earlier paper (*RHODORA* 51: 147-149. 1949), the authors have either collected or have found these new records in the herbarium of the Chicago Natural History Museum. All specimens collected have been deposited in the herbarium of that institution.

ADDITIONS TO THE FLORA OF ILLINOIS

Lycopodium inundatum L. According to Jones (*Amer. Midl. Nat.* 38: 79. 1947), the only known station in Illinois ("Evanston, Sept. 20, 1890, L. N. Johnson") has since been destroyed. The present station, discovered in Cook County, is validated by the following collection: sphagnum-covered swale along Thornton-Lansing Road east of Thornton, Sept. 14, 1947, Steyermark 65010. The plant has been observed in the same locality by Mr. Swink as recently as September, 1951.

Elymus arenarius L. According to the 8th edition of Gray's Manual of Botany, "Typical *E. arenarius*, with culm glabrous at summit, rachis glabrous except for ciliate angles, and firm glumes 1-3-nerved, is Eurasian." Several years ago Mr. O. C. Durham of Abbott Laboratories, North Chicago, Illinois, collected specimens at Waukegan, Lake Co., Ill., of an *Elymus* which the senior author identified as typical *E. arenarius*. Since then the junior author has made a collection which can be referred definitely to typical *E. arenarius*. The data for this collection is: on open dunes just north of the pumping station at Glencoe, Cook Co., June 25, 1951, Swink 76. So far as records indicate, these are the only collections of the typical form of the species reported for the United States.

Scirpus paludosus Nels. This species recently collected by the junior author has not been previously reported from Illinois. This collection was made in a ditch along the west side of Halsted Street at 144th Street, at Kickapoo Grove in Riverdale, Cook Co., August 12, 1951, Swink 329. The colony is more than 100 yards in length and markedly dominates the vegetation in the ditch.

Convallaria majalis L. While botanizing a decadent tamarack bog on the outskirts of the south part of the town of Wauconda, Lake County, the senior author was surprised to encounter a small stand of the European Lily-of-the-valley, which apparently was introduced or bird-disseminated

many years ago in the heart of this primitive wild spot. Collections were made both in anthesis and in fruit. The colony has apparently persisted for many years and is growing on a moist hummock associated with such species as *Cypripedium reginae*, *Maianthemum canadense* var. *interius*, *Aralia racemosa*, and *Dryopteris thelypteris* var. *pubescens*, giving every appearance of being part of the native vegetation. The data for these collections is: in dense woods, next to meadow bordering north end of tamarack swamp on south side of Wauconda, east of highway 12, Lake Co., August 28, 1949, Steyermark 69026; same locality, May 31, 1950, Steyermark 69934.

POPULUS × JACKII Sarg. Some of the material previously collected and named either *P. balsamifera* or *P. candicans* in northern Illinois, such as Huron Smith 6041 from Waukegan, Lake Co., Frank C. Gates 3155 from the same locality, and Sherff s. n. from Washington Park, Chicago, the present authors would refer to this hybrid. Also, a specimen collected by Charles S. Sargent (Sargent 28) from Waukegan in 1917, and questioned by him as being referable to *P. × Jackii*, is in our opinion this same hybrid. These specimens show the lower surfaces of the leaves and the petioles entirely glabrous and the shape of the leaf broadly cordate-ovate. Recent collections made by the junior author are: near Lake Michigan on the McCormick Blair property north of Lake Bluff, Lake Co., June 25, 1951, Swink 56, and, in sandy soil near Lake Michigan south of the main parking lot of the Illinois Beach State Park, north of Waukegan, Lake Co., August 31, 1951, Swink 566.

POLYGONUM CUSPIDATUM Sieb. & Zucc. This species was found established in waste ground near Torrence Avenue at about the 12000 block in Chicago, Cook Co., September 19, 1951, Swink 768. So far as our records indicate, this is the first collection for Illinois.

GEUM RIVALE L. This species was not reported either in the first or second edition of Jones' Flora of Illinois, but was reported as occurring in northern Illinois in the 8th edition of Gray's Manual. We have both collected this species near Elgin in Kane County. The collection in the herbarium of the Chicago Natural History Museum is: local in *Thuja* swamp, Trout Park (Elgin Botanical Garden), just north of Elgin, Kane Co., June 29, 1949, Steyermark 68331. The plant was growing associated with typical indigenous species of the Arbor Vitae swamp.

TRIFOLIUM PRATENSE L., f. *LEUCOCHRACEUM* Aschers. & Prantl. The white-flowered form of this species was found, in an open meadow along highway 66 just southwest of McLean, McLean Co., July 4, 1946, Steyermark 63780.

VICIA DASYCARPA Ten. The authors found this species occurring with *Vicia villosa* where it had been introduced along highway 66. The data for this collection is: open ground along highway 66 near Thomasville, Montgomery Co., June 14, 1951, Steyermark & Swink 71730.

PTELEA TRIFOLIATA L., f. *PUBESCENTS* (Pursh) Voss. The pubescent form has been found in at least two separate areas in northern Illinois. These collections are: sandy ridge bordering woods, Camp Harrison, 1½

miles west of Calumet City, Cook Co., June 22, 1949, Steyermark 68307; in woods near Lake Michigan on the McCormick Blair property north of Lake Bluff, Lake Co., June 25, 1951, Swink 55.

GAYLUSSACIA BACCATA (Wang.) K. Koch, f. *GLAUCOCARPA* (Robins.) Mackenz. The data for this collection is: in open acid ground about $\frac{1}{4}$ mile south of route 113 S and about 2 miles southeast of Custer Park, Will Co., September 3, 1951, Swink 573.

ASCLEPIAS INCARNATA L., f. *ALBIFLORA* Heller. The data for this collection is: along route 54 just north of junction with route 30, Olympia Fields, Cook Co., July 27, 1949, Steyermark 68624, "hood white, petals white throughout or with pale pink at ends."

ANCHUSA OFFICINALIS L. The data for this collection is: near C. & N. W. railroad, not near any habitation, Elgin, Kane Co., November 10, 1916, H. C. Benke 1361.

LAPPULA REDOWSKII (Hornem.) Greene, var. *OCCIDENTALIS* (Wats.) Rydb. The data for these collections is: Huntley, McHenry Co., June 16, 1916, H. C. Benke 1804; Port Byron, Rock Island Co., without date, herb. E. T. Harper s. n.

SALVIA SYLVESTRIS L. An extensive stand of this was found in bloom in a field on the west side of highway 59 just north of junction with highway 19, between West Chicago and Barrington, two miles north of Bartlett, Cook Co., July 9, 1951, Steyermark 72138.

LONICERA XYLOSTEUM L. A specimen in the herbarium of the Chicago Natural History Museum bears the following data: woods, West Pullman, Cook Co., May 21, 1898, L. M. Umbach s. n.

LONICERA MORROWI Gray. This species has been found in at least two localities in northern Illinois and is represented as established in the wild state by the following collections: Waukegan dunes, north of Waukegan, Lake Co., June 13, 1940, Standley & Steyermark 28129; on a slope facing Lake Michigan, just north of the pumping station at Glencoe, Cook Co., June 25, 1951, Swink 72.

EUPATORIUM PERfoliatum L., var. *CUNEATUM* Engelm. Recently found growing in the proximity of *E. perfoliatum* and *E. serotinum* in partly shaded ground about $\frac{1}{4}$ mile south of route 113 S and about 2 miles southeast of Custer Park, Will Co., September 3, 1951, Swink 586.

SOLIDAGO SEMPERVIRENS L., var. *MEXICANA* (L.) Fern. For several years we have been puzzled by a peculiar goldenrod which occurs in several places in and near downtown Chicago. It was first seen in 1933 near the Century of Progress grounds south of the Chicago Natural History Museum and its marked similarity to the seaside goldenrod (*S. sempervirens*) was then observed. Subsequent study of the material proves without doubt that it is the variety of this species, although some of the material could be referred almost as well to typical *S. sempervirens*. So far as is known, this is the only inland station recorded for the species or its variety. The senior author has transplanted a couple of clumps of this plant to his wild flower garden. In its various Chicago habitats as well as in its transplanted state the plants have retained a fleshiness of the

leaves, a characteristic of both the species and variety, perhaps more so of the species. The data for this collection is: along Outer Drive, just west of Chicago Natural History Museum, Chicago, Cook Co., October 20, 1947, Steyermark 65308. In addition, this variety has been found by both of us to be abundant along railroad tracks and in vacant lots around Clark Street between Roosevelt Road and Cermak Road in Chicago.

ADDITIONS TO THE FLORA OF THE CHICAGO REGION

OPHIOGLOSSUM VULGATUM L., var. *PSEUDOPODIUM* (Blake) Farw. According to Jones (Amer. Midl. Nat. 38: 92. 1947), the only stations known in Illinois for this species and included varieties are from Jackson, Union, and Wabash counties, all in southern Illinois. While the present authors were on a futile search for *Thismia americana* N. E. Pfeiff. at its type locality, hundreds of plants of this *Ophioglossum* were found in a low moist sedge prairie. Although the same variety has been found in adjacent Indiana, this is the first station recorded for northern Illinois. The data for this collection is: bottom prairie swale, on east side of Calumet Lake, between Torrence Avenue and Nickel Plate railroad at about 11900 South, between Ford plant and Solvay Coke plant, Chicago, Cook Co., Illinois, June 2, 1949, Steyermark & Swink 68222.

BROMUS PURGANS L., f. *LAEVIVAGINATUS* Wieg. Deam, in his Flora of Indiana, page 98, does not show the distribution of this form in the state. It was collected along Hart Ditch in Wicker Park in Highland, Lake Co., Indiana, Sept. 15, 1951, Swink 731.

AGROPYRON REPENS (L.) Beauv., f. *ARISTATUM* (Schum.) Holm. This form was collected along railroad tracks near Clark Road north of the old village of Clarke in Gary, Lake Co., Indiana, June 23, 1951, Swink 18.

LIPARIS LILIFOLIA Richard. During the summer of 1950, Mrs. Cora Steyermark discovered a single plant of this species, occurring within a few feet of the vegetable garden on the property of the senior author near Barrington, Illinois. An investigation of the known records in the herbarium of the Chicago Natural History Museum failed to reveal any specimens from northern Illinois. Inquiry about the distribution of this plant from Dr. G. N. Jones, of the University of Illinois, brought forth the fact that the species had been reported from Cook County in northern Illinois in the American Botanist 18: 79. 1912 by Mr. Edwin Hull, but had been collected much earlier in Cook County from moist woods, Forest Hill, June 12, 1878, by E. J. Hill. What has been a puzzle was the occurrence of this single plant growing so far removed from its nearest known extant locality in the Indiana dunes, since the 1878 station from Cook County has been exterminated. Deam, in his Flora of Indiana, page 350, cites the occurrence of a stand in Putnam County, Indiana, about 3 miles northwest of Greencastle, where on June 3, 1910, he "found it in a 19-year old Catalpa planting that had been first cultivated to strawberries and later abandoned. Here the plant was growing by the hundreds." In the present instance, it seemed improbable that the location

of the single plant discovered by Mrs. Steyermark owed its origin to cultivation or introduction.

A subsequent thorough investigation of some of the natural woodland area in the vicinity resulted, quite accidentally, in the discovery of nearly 250 plants in one locality and half a dozen in another, and showed that the species had been overlooked by previous exploration. The data for these collections is: upland oak-hickory knoll, in grassy-*Carex pensylvanica*-*Hepatica americana* association on north side of creek, south of Eton Drive and west of Kimberley Road, Biltmore Estates Subdivision, 5 miles north of Barrington, Lake Co., Ill., August 13, 1950, Steyermark 69960; same locality, June 20, 1951, Steyermark 71738. Dr. Jones states (in correspondence) that this Lake County collection "certainly constitutes a new county record."

POPULUS × JACKII Sarg. This species has been discussed above under records new to Illinois. The following Indiana specimens are also to be referred to this hybrid: along the edge of the old Grand Calumet River (now filled in) at Marquette Park in Gary, Lake Co., Indiana (not planted), July 29, 1951, Swink 239; near the Lake Michigan shore at the east end of the Indiana Dunes State Park near Tremont, Porter Co., Indiana, July 29, 1951, Swink 254.

QUERCUS × RUNCINATA (A. DC.) Engelm. This is apparently the first Chicago area record for this hybrid oak. It was found by the junior author, along a gravel road just west of a small bridge crossing Marley Creek about $\frac{1}{2}$ mile south of Marley, Will Co., Illinois, August 12, 1951, Swink 325.

TRAUTVETTERIA CAROLINENSIS (Walt.) Vail. In going over the herbarium of Northwestern University, now on permanent loan at the Chicago Natural History Museum, a specimen of this species was observed with the following data: low prairies, Benton County, Indiana, August 3, 1876, collected by E. F. Shipman. While Benton County is not strictly in the Chicago region, it is near enough to it to warrant inclusion of this interesting collection in the present report. Deam, in his Flora of Indiana, page 465, states regarding this rare plant: "There is a specimen in the herbarium of De Pauw University collected by Blatchley which was in bud June 8, 1889, and was collected in the Heckland prairie about 10 miles northeast of Terre Haute, Vigo County, and one in the Gray Herbarium bearing the following label: 'Low prairies, w. Ind. E. F. Shipman, 1876'." The present discovery not only clears up the indefinite data concerning the Gray Herbarium specimen, but also proves that its range extends northward to Benton County.

APIOS AMERICANA Medic., f. *PILOSA* Steyermark. So far as known, this is the first record in the Chicago area. The data for this collection is: along Hart Ditch in Wicker Park in Highland, Lake Co., Indiana, September 15, 1951, Swink 723.

VACCINIUM CORYMBOSUM L., var. *GLABRUM* Gray. So far as known, this is the first record in the Chicago area. The data for this collection is:

in moist shaded ground about one mile west of Baileytown, Porter Co., Indiana, July 29, 1951, Swink 230.

RUELLIA STREPENS L. The data for this collection is: 3 miles below Sugar Island, east bank Iroquois River, Kankakee Co., Illinois, June 22, 1913, Judge Arthur De Selm 176. This appears to be the first Chicago area record.

VIBURNUM RECOGNITUM Fern. At the time the large colony of *Liparis* *lilifolia* referred to above was found, two shrubs of a *Viburnum* growing along a creek in a wooded valley below the *Liparis* stand were observed. An examination of this material showed it to be *V. recognitum*, having glabrous peduncles and rays of the inflorescence. It has not been previously known from northern Illinois. If this species is found eventually not to be distinct from *V. dentatum* L., the record for the occurrence of *V. dentatum* would still constitute a new one for the Chicago area. The data for this collection is: along north side of stream in low woods south of Eton Drive and west of Kimberley Road, Biltmore Estates Subdivision, 5 miles north of Barrington, Lake Co., Illinois, August 13, 1950, Steyermark 69961.

VERNONIA ALTISSIMA Nutt., var. *TAENIOTRICHIA* Blake. This has been found in northern Indiana. The data for the collection is: in open ground near Hansen Road about one mile north of U. S. highway 20, west of Springville, La Porte Co., Indiana, August 25, 1951, Swink 430.

BIDENS CONNATA Muhl., var. *ANOMALA* Farw. Apparently the first record of the variety for the Chicago area. The data upon which it is based is: in sandy soil along the Grand Calumet River west of Lake Street in Gary, Lake Co., Indiana, September 15, 1951, Swink 703.

All of the additions to the flora of Illinois listed above are also new to the Chicago area with the exception of *Lycopodium inundatum*, *Vicia dasycarpa*, and *Trifolium pratense* f. *leucochraeum*.—CHICAGO NATURAL HISTORY MUSEUM AND UNIVERSITY OF ILLINOIS COLLEGE OF PHARMACY, CHICAGO, ILLINOIS.

PERLUSTRATIONES PLANTARUM ARCTICARUM III:

'PARRY PLANTS' IN THE POSSESSION OF THE
ROYAL GEOGRAPHICAL SOCIETY, LONDON

NICHOLAS POLUNIN

THESE specimens belonging to the Royal Geographical Society were made available to me some years ago through the kindness of the then Secretary, the late A. R. Hinks, C.B.E., F.R.S. They comprise a single small collection which, surprisingly enough, is said to be the only plant collection in the possession of the Society. Of its main features of general interest I have already given a brief account (Geog. Journ., vol. 102, pp. 27–29, 1943);

here it will suffice to summarize the more pertinent of these and some other features by way of introduction to a more detailed statement of the significance of this collection and finally of its composition.

The collection consists of seventeen well preserved specimens, each mounted on a sheet of rather thin paper about 18.5 cm. long and 11.5 cm. wide, and all enclosed in a home-made folder of stiff green paper. On an eighteenth sheet is written the following note: "Arctic Flowers—Latitude 69°. 20'. 40" N. Longitude 83. 10. 00 W. June & July 1823. Collected on Captn. Parry's expedition by Lieut. Richards." The eighteen sheets of paper appear to have come from one source, all being of similar weight and texture and several being watermarked with an elaborate symbol, 'fancy' letters, and the date "1822"; they include the one bearing the detailed note. Probably this note was written not immediately, but still not many years, after the events to which it refers; probably (but by no means certainly) it refers at least in some degree to all of the specimens in the collection.

The donation of the collection to the Society by Mr. J. Foster Stackhouse in 1910 is recorded in the R.G.S. Museum Catalogue, p. 28; the only other notes accompanying the specimens are attempted identifications pencilled, apparently much later, on many of the sheets. In the absence, thus, of contemporary or near-contemporary 'individual' notes as to locality, etc., it would be unsafe to found new records on any of these specimens (cf. Perl.¹ I and II), however likely it may seem that the one 'general' label refers to all of them. This label indicates collection during Parry's 'second' voyage (1821-23), professedly on the mainland of Melville Peninsula a few miles south of Quilliam Creek, which was much visited, by parties from both his ships, during the summer of 1823—see W. E. Parry, "Journal of a Second Voyage for the Discovery of a North-West Passage from the Atlantic to the Pacific . . .", London, 1824, pp. 434 *et seq.*

This expedition was the first to explore most of the Melville Peninsula region, which has moreover been comparatively little visited since. The collector, "Lieut. Richards," appears to have been the Charles Richards mentioned by Parry (*op. cit.*) as one

¹ Refers to previous contributions in this series of "Perillustrationes Plantarum Arcticarum," published in *Journ. Bot.*, vol. 80, pp. 81-94, "1942," and RHODORA.

of the Midshipmen on board the *Hecla* during this and also his next voyage (see W. E. Parry, "Journal of a Third Voyage . . .", London, 1826); as in the case of Bushnan (Perl. I) I have been unable to find out the date of Richards's promotion to Lieutenant, if indeed he ever held that rank, but meanwhile the use of the title suggests that the label was not written until some years after the plants were collected.

Considering the above circumstances it is gratifying to find that, although it seems very unlikely that W. J. Hooker consulted the present collection when preparing his "Botanical Appendix"² to Parry's account of the voyage, all of the specimens represented in the collection are reported by Hooker from Melville Peninsula or the adjacent islands, while most of them are now known to be so widespread and plentiful in the region as to require little further comment here (cf. my Botany of the Canadian Eastern Arctic, Part I).³

In the introduction to his appendix,² Hooker explains that "The principal herbarium, from which . . . notes were made, was sent to me by Captain Parry," though "Mr. Edwards allowed me the free use of his ample collection," while another small set "deposited in the Hunterian Museum in the University of Glasgow" was "also of some service." (Hooker made "from Captain Parry's Herbarium . . . an ample collection of specimens, which is deposited in the British Museum, and another which is placed in the Museum of the University of Edinburgh.") Apart from his specific mention of the above three original collections and of occasional single specimens contributed by others, Hooker (*op. cit.* p. 410) implies that further collections which he did not see were made during this expedition; these last appear to include the present set as, moreover, Hooker does not mention Quilliam Creek or its vicinity. However, even if the components of this R.G.S. collection could be accepted as having come from the point in northeastern Melville Peninsula indicated by the above-quoted label, they would have little of importance to add to our phytogeographical knowledge, as every one of the species represented is well known to occur on the island of Igloolik less than fifty miles to the east.

² Pp. 381–430 of the "Appendix to Captain Parry's Journal of a Second Voyage . . .". London, 1825.

³ Canada: Department of Mines and Resources, *National Museum Bulletin* No. 92, pp. vi + 408, 1940.

The different plants in the R.G.S. collection number sixteen in all, one being represented by two specimens; treated and arranged as in previous contributions in this series (except that the pencilled attempts at identifications are often so wild as to seem best ignored), these plants are as follows, the synonyms given being merely those needed for direct reference to Hooker's appendix.⁴

Alopecurus alpinus Sm.

Lychnis apetala L.

Cerastium alpinum L., s. l.

Ranunculus sulphureus Soland. in Phipps (Hooker's "*R. nivalis* . . . β").

Hitherto known on Melville Peninsula and the adjacent islands only from Barrow River and Igloolik, in both of which localities gatherings were made during Perry's 'second' voyage (see Bot. Can. E. Arctic, I, p. 217).³ Possibly not uncommon.

Papaver radicatum Rottb. (*P. nudicaule* of some authors, not L.).

Eutrema edwardsii R. Br. Known so far from seven localities almost throughout the length of Melville Peninsula and its adjacent islands; probably plentiful (see Bot. Can. E. Arctic, I, p. 228, and W. J. Cody in Can. Field-Nat. **64**: 92, 1950).

Lesquerella arctica (Wormskj.) S. Watson (*Vesicaria arctica* (Wormskj.) Richardson). Not yet confirmed from the mainland portions of Melville Peninsula, but known from the time of Parry's 'second' expedition from two of the adjacent islands, and recently found on a third (see Bot. Can. E. Arctic, I, p. 232). Probably confined to calcareous regions and accordingly local.

Draba alpina L., s.l. Two specimens belonging to this variable complex.

Draba fladnizensis Wulfen, s.l. (probably Hooker's "*D. hirta* . . . var. 4"). Known so far from eight localities in the general region; probably plentiful (see Bot. Can. E. Arctic, I, p. 238).

Saxifraga cernua L.

Saxifraga caespitosa f. *uniflora* (R. Br.) Engler & Irmscher

Saxifraga tricuspidata Rottb.

Saxifraga hirculus var. *propinqua* (R. Br.) Simmons. This specimen, unlike many that I have seen previously from Melville Peninsula, appears to be referable to this usually separable northern variety while still somewhat reminiscent of the typical form into which gradation is complete farther south.

Saxifraga oppositifolia L.

Dryas integrifolia M. Vahl

Pedicularis capitata Adams (*P. nelsonii* R. Br.). Known hitherto from six localities on Melville Peninsula or its adjacent islands, ranging from the northeast to the extreme south; probably fairly plentiful (see Bot. Can. E. Arctic, I, p. 338).—GRAY HERBARIUM OF HARVARD UNIVERSITY.

⁴ While this paper was in press, there appeared J. A. Calder's useful "Vascular flora of Melville Peninsula, Franklin District, N. W. T." (Canadian Field-Naturalist, **65**: 180–184. 1951) which, with the forthcoming paper which he cites by W. J. Cody, may demand revision of the numbers of localities from which four of the species mentioned here are stated to be known, though this cannot be determined without more details than are given in Calder's florula.

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